FISCAL YEAR 2003 PROGRAM

OCTOBER 2002

U.S. Army Research Institute
for the Behavioral and Social Sciences

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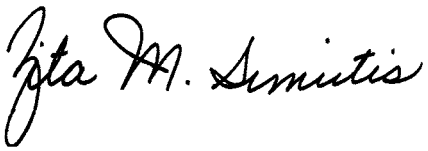
Foreword

The mission of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is to maximize individual and unit performance and readiness to meet the full range of world-wide Army missions through advances in the behavioral and social sciences. The purpose of this document is to describe the work that ARI will accomplish in its Fiscal Year 2003 program.

Stephen L. Goldberg
Acting Technical Director



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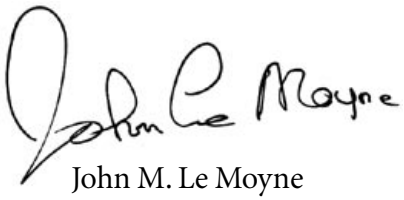

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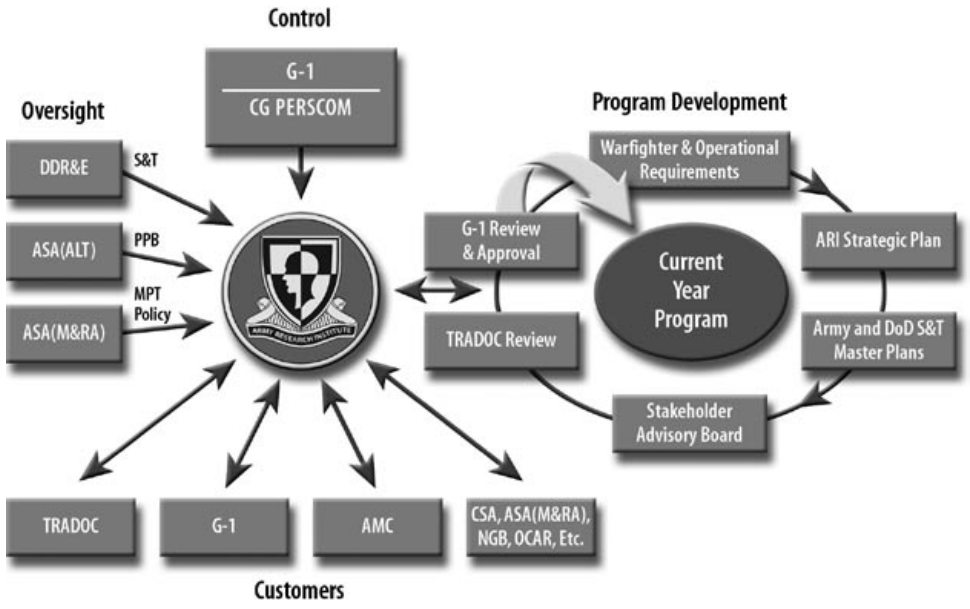
ARI Fiscal Year (FY) 2003 Program

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is the primary Army laboratory conducting research, studies, and analyses focused on the human dimension of the Army – the Soldier. We are part of the Department of Defense and U.S. Army Science and Technology (S&T) communities. As such, we are linked for both budget and program to key Secretariat and Warfighter components. Figure 1 provides an overview of these links and the program development cycle that we use annually to ensure that our Science and Technology (S&T) and Operational programs remain on track and relevant.

Figure 1: ARI Program Control and Development Cycle, Oversight Agencies, and Customers



Over the last few years, the Army has been in a process of transformation that is designed to produce and support an Objective Force that is equipped, trained, and ready to be more strategically responsive, deployable, agile, versatile, lethal, survivable and sustainable across any and all operations. The human dimension remains most important to the success of this transformation. Soldiers and leaders operate the vehicles and equipment, shoot the weapons, make the decisions, react to stress and change, and improvise when systems fail.

The Army Vision makes it emphatically clear that without highly skilled, competent, and dedicated people, it will not matter how good our weapons are or how well we strategically employ them. As the Army's behavioral science center of excellence, ARI's vision and strategy are linked to the Transformation Campaign in two important ways. First, we will

provide innovative behavioral science research to develop technologies and products to help solve the personnel, training, and leader development problems that emerge as the Army moves to a lighter and more agile, lethal, automated, and autonomous force. Second, we will apply leading edge behavioral science knowledge and information to help the Army achieve the human dimension over-match required in Objective Force operations. Our research, studies and analyses will provide the foundation for selecting and assigning quality people, conducting effective training and leader development, and maximizing the efficiency and effectiveness of technologies and simulations. It will also improve the integration of the Reserve and Active components of the Army into effective teams and improve the retention of high quality, experienced soldiers and leaders.

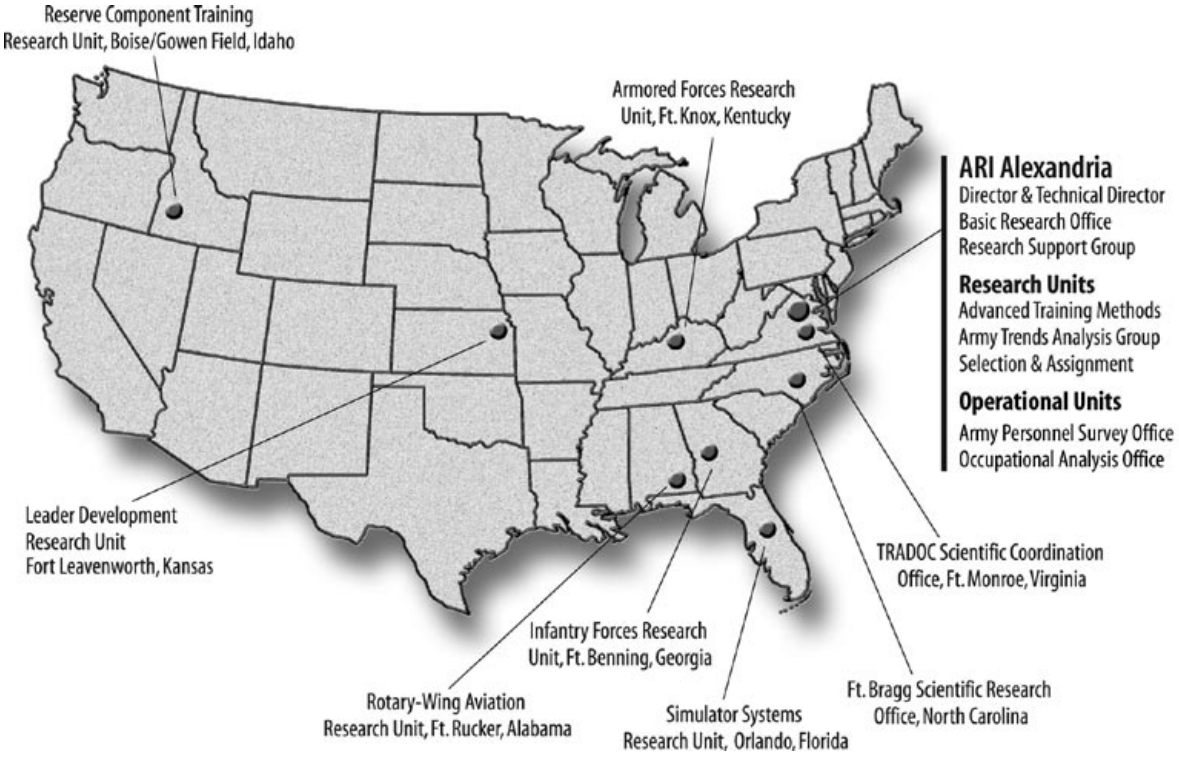
Overall Program and Locations

ARI accomplishes its mission through the Science and Technology (S&T) and Operational programs. The S&T program is comprised of the university-based Basic Research program run by our Basic Research Office and the Applied Research, Advanced Technology Development, and Research-based Studies and Analysis programs executed in our Research Units. The Operational program includes two "Centers of Excellence" – one for Army Personnel Surveys and one for Occupational Analysis. In addition, our professional skills, experience, and storehouse of data provide the Army with:

- Technical expertise and analytical support at all levels of the Army
- Quick-response capability when specific problems arise
- Insight into the impact of policy/program changes on soldiers and leaders
- Timely information on soldier and leader attitudes and concerns so senior leaders can keep their "finger on the pulse" of the operational Army

As shown in Figure 2, ARI is strategically located to be close to our primary customers. This facilitates our research and the partnerships necessary for leveraging our scientific expertise to provide higher payoffs for the operational Army. Our program approach has addressed, and will continue to address, the short-term needs and long-term goals of the Army related to training, leader development, and personnel.

Figure 2: ARI Locations

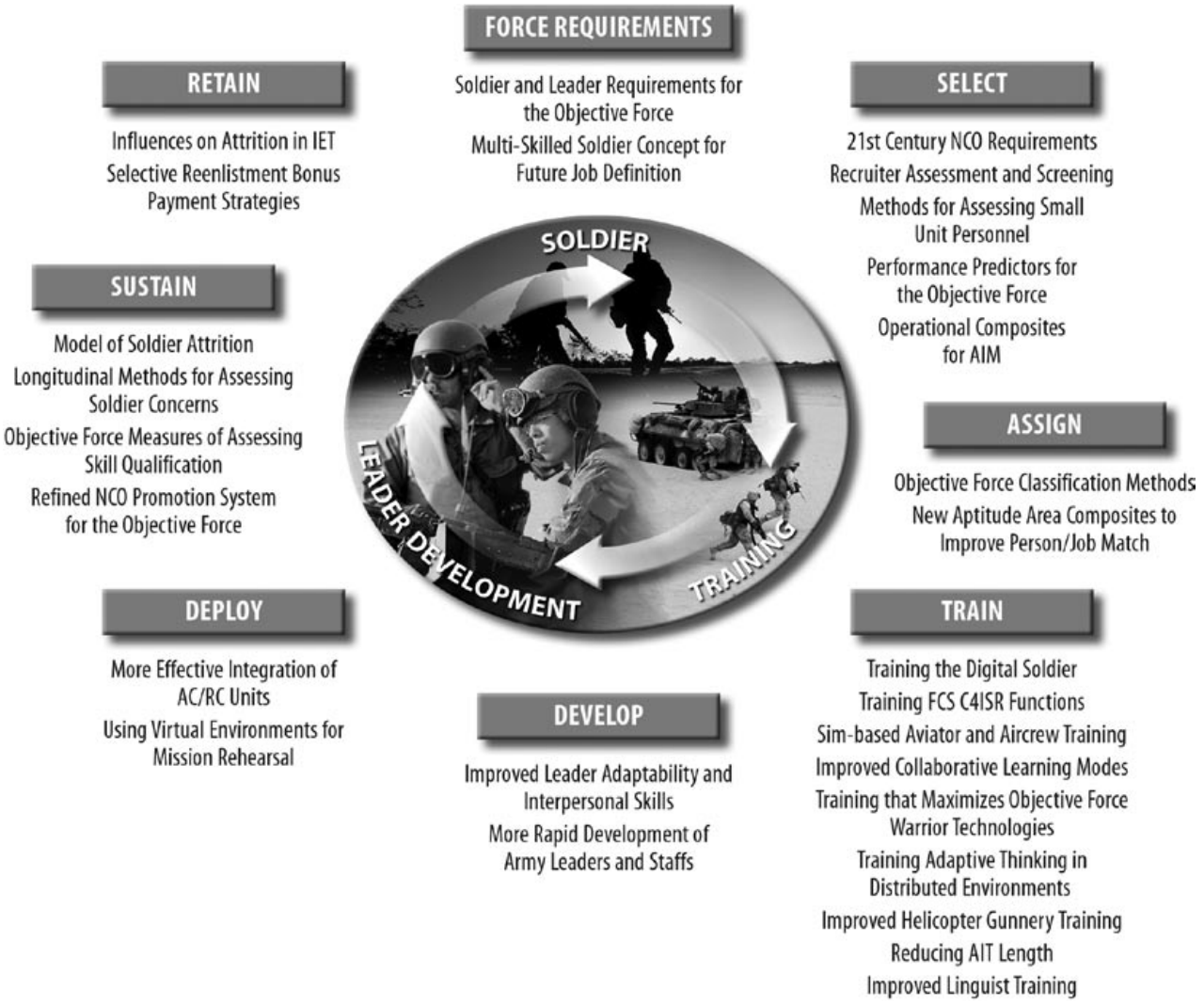


FY2003 Program and Budget

ARI's FY2003 program addresses issues related to the total life cycle of the soldier with a focus on transforming personnel, training, and leader development so the soldier stays ahead of advances in technologies, missions, and requirements envisioned for the Objective Force. Figure 3 shows our individual projects across the soldier life cycle.

As part of our S&T program, ARI currently has four approved Science and Technology Objectives (STOs). These are our highest priority projects and are reviewed annually by the Warfighter Technical Council (WTC), co-chaired by the Director for Technology, Office the Deputy Assistant Secretary of the Army for Research and Technology and the U.S. Army Training and Doctrine Command (TRADOC) Assistant Deputy Chief of Staff,

Figure 3: ARI S&T Issues Across the Soldier Life Cycle



Combat Development. The STOs are approved at the two-star level by the Army Science and Technology Working Group and the Army currently has approximately 200 STOs. The STO projects typically have a timeframe of three to six years and are described in Volume 2 of the Army Science & Technology Master Plan.

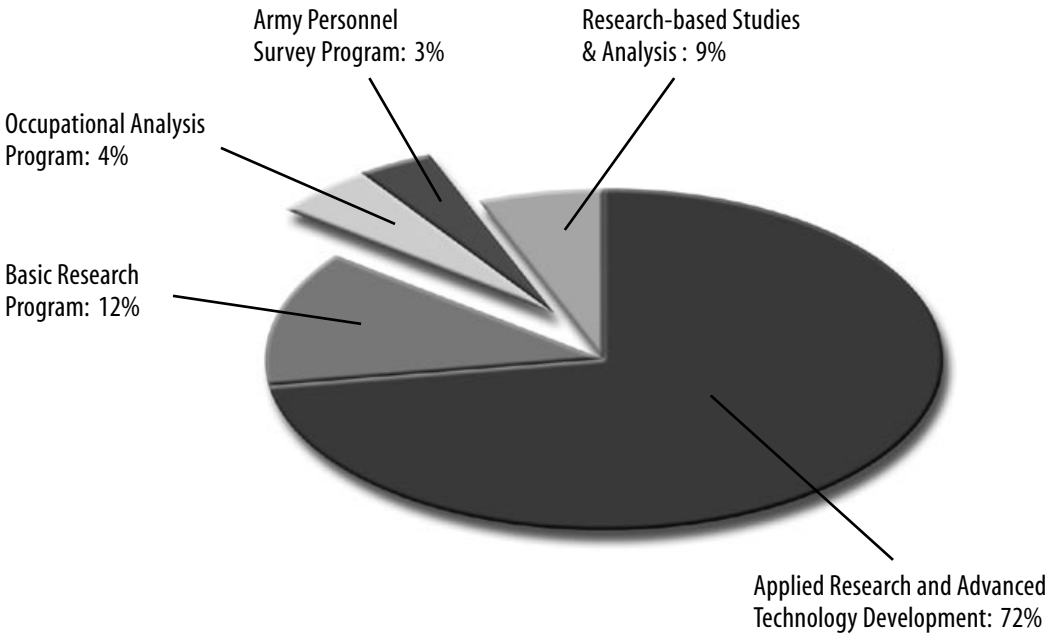
Figure 4 provides the distribution of our FY2003 budget across our S&T and Operational programs.

This document describes ARI's total FY2003 program as follows:

- The Science & Technology program:
  - The Basic Research program
  - Applied Research Development and Advanced Technology Projects related to the STOs
  - Additional projects in Applied Research and Advanced Technology Development
  - The Research-based Study and Analysis Program
- The Operational program:
  - Center of Excellence for Army Personnel Surveys
  - Center of Excellence for Occupational Analysis

It also provides a list of ARI units and contact information. The ARI website has a number of our publications readily available and provides easy access to our products and information (www.ari.army.mil).

Figure 4: Budget Allocations Across the S&T and Operational Programs



FY2003 SCIENCE & TECHNOLOGY (S&T) PROGRAM

Personnel

ARI 's Soldier S&T Program includes projects that develop new technologies to recruit, assign and sustain quality personnel. The main goals of this program are to enhance the quality of the Army's entry-level personnel and to sustain the quality workforce the Army already has. We do this through research to improve selection, assignment, and promotion procedures, to understand the key factors that influence soldier career decisions, to track soldier concerns, and to manage personnel turnover (attrition/retention). This program will produce tools and techniques to aid the Army in predicting successful performance in Army jobs of the future, and help retain quality soldiers and leaders necessary for the successful transformation to the Objective Force.

Training

Soldiers and leaders should be prepared to transition easily and quickly as technologies change. ARI's Training S&T Program includes projects that develop innovative strategies for training versatile, multi-skilled soldiers and leaders. This includes preparing units for Objective Force missions, maximizing the effectiveness of simulation-based training, and capitalizing on web-based, distributed learning techniques. By taking full advantage of automation technologies, as well as simulated and virtual environments, our training research will provide the basis to transform Army training so that it is more readily available when and where soldiers and units need it.

Leader Development

ARI's Leader Development S&T Program focuses on methods to improve decision-making and quick thinking on the battlefield, to accelerate leader development, and to improve interpersonal and team-building skills. As part of the program, we are investigating new methods that make use of promising game strategies and simulated environments to speed and improve the development of leaders and digital command staffs. A major thrust of our research is to leverage cognitive and instructional technologies in ways that improve critical thinking skills, as well as develop or improve the adaptability required of effective leaders in the Objective Force operating environment.

BASIC RESEARCH PROGRAM
Identifying New and Promising Technologies

Basic Research Office

ARI's Basic Research Office (BRO) manages the basic research program. It is, primarily, a university-based program that focuses on the personnel, training, and leadership requirements of the future Army. BRO maintains close contact with the scientists within ARI and with other Army and DoD agencies conducting basic research to define issues that require fundamental research, to ensure that the basic research program is coordinated across services, and to facilitate the transition of basic research results into applied research programs for eventual use by the operational Army.

Personnel Issues for the New Century

Identifying and measuring the aptitudes and skills that are projected to be required for effective human performance as the Army transforms to the Objective Force is a major theme of this basic research effort. As part of this process, we are devising methods that can assess such attributes as persistency and dependability, describe how these attributes develop, and measure their contribution to performance and job tenure. For example, we have begun a new effort to assess individual adaptability and flexibility as aptitudes that can be measured across job domains. Other research efforts are exploring the sociological and psychological factors that could influence recruitment and retention; understanding how various social structures, such as the family, and population demographics influence Army performance; and investigating the conditions under which turnover hinders or helps team performance. Although turnover is often thought of as harmful, for example when a team loses a productive member and must expend time and energy training a replacement; turnover can also be helpful, as when a team loses an unproductive member and gains a replacement with valuable knowledge. We anticipate that results from these research efforts will make important contributions to understanding and improving organizational effectiveness.

Training for Speed and Knowledge

Basic research in this area is developing concepts and methods for training complex tasks and for sustaining complex task performance. Assessing the cognitive impact on the human of Objective Force technology requirements arising from digital, semi-automated, and robotic systems is part of this process. A new effort in this area will seek to understand the impact of voluminous, multi-modal data on human performance, then explore

how individuals and teams might be trained to integrate and use this rapidly-presented data. Another project is experimenting with unique training principles and methods to improve interpersonal skills and team adaptability and performance. Successful projects will transition to our applied research program to test the principles and methods in Army training environments. The models and theories produced through this work will be useful in identifying individual differences in training and will facilitate practical, individualized, adaptive training methods for a wide range of tasks.

Assessing and Improving Leader Skills

Commensurate with the Objective Force requirements for rapidly developing adaptable, flexible leaders, the basic research program in leader development is directed toward providing concepts and methods for accelerating leader development and understanding how to develop adaptability and flexibility in a manner that can be tested in the applied environment. One of our major efforts in this area is using Sternberg's Theory of Practical Intelligence to develop new techniques for acquiring experience-based knowledge (tacit knowledge) faster and earlier in the human development life cycle. Another is focused on discovering and testing the basic cognitive principles that underlie effective leader-team performance. A third major area is centered on understanding the dynamics of small group leadership in face-to-face and distributed team environments. For example, one of our research projects seeks to develop leadership techniques that foster interaction, communication, and trust in electronic environments. Another examines group behavior under the stress of performing in a metropolitan hospital shock trauma center when the lead surgeon is communicating with the group through video and voice transmission.

APPLIED RESEARCH AND ADVANCED TECHNOLOGY DEVELOPMENT PROGRAM

SCIENCE AND TECHNOLOGY OBJECTIVES (STOs)

In FY2003, ARI has four approved STOs and one proposed STO that include nine separate projects. They are:

- Simulation-Based Aviator Training
- Training Tools for Web-based Collaborative Environments
- Selection, Classification, and Performance Metrics for the Objective Force Soldier
- Methods and Measures of Commander Centric Training
- Training Objective Force Small Unit Leaders and Teams

Rotary-Wing Aviation Research Unit

Simulation-Based Aviator Training *(STO IV.SP.1999.03)*

Army flight training is evolving toward greater reliance upon simulators as downsizing and reduced resources provide fewer aircraft hours and instructors. These factors, along with the accelerating pace of developing simulation technology, have made it imperative that the Army optimize the use of simulation in skill training to attain basic and advanced aircraft qualification.

This program (FY99-03) provides the Army with training objectives, methods, and instructional strategies that demonstrate how simulation can best support Army flight training, from initial to advanced aircraft qualification. In cooperation with the Army Aviation Center, we are developing prototype training programs that effectively combine simulators with aircraft to exploit the best training capabilities of both environments. In addition, using our in-house simulator research facilities, we are investigating the role of simulation devices ranging from desktop training devices to flight simulators, the role of instructors in the initial and advanced flight training programs, and the instructional processes in simulator training for Initial Entry Rotary Wing (IERW), for advanced Aircraft Qualification Course (AQC) flight training, and for collective training applications. We have defined both the applicability and the limitations of two commercial, off-the-shelf devices and have begun a general assessment of device attributes. We are working with the Army Aviation Center and School to define a revised flight training curriculum called Flight School XXI to ensure that aviators are well prepared to keep pace with the advances in aircraft systems and changing operational requirements.

In FY2003, we will:

- Advance flight simulation technology through development of generic, adaptable aerodynamic modeling and low-cost high-content image generation.
- Extend the Intelligent Flight Trainer automated verbal coaching concept for hover, approach, and landing pattern tasks in primary flight training.
- Expand assessment of simulator effects on individual discomfort to compare night vs. day simulated operating environments.
- Advance the development of collective aviator training technologies, particularly through the Rotary Wing Advanced Networked Training Simulator and participation in collective training exercises.

Training Tools for Web-based Collaborative Environments *(STO IV.SP.2001.01)*

Advanced Training Methods Research Unit

Training in the Army is shifting from a system that is classroom-based to one that is soldier-and-network centered. The purpose of this shift is to deliver instruction on demand wherever and whenever needed. Research on how best to use distributed delivery systems to train will help the Army take best advantage of emerging technologies.

This research project began in 1999 and was integrated as part of a Simulation, Training, and Instrumentation Command (STRICOM) STO in 2001. The project will demonstrate that well-designed use of Internet and Web-based technologies, particularly for collaborative learning, can be at least 20% more effective than traditional classroom methods. In addition, numerous instructor functions in synchronous and asynchronous learning environments can be automated, leading to lower training costs.

By completion of this research, ARI will provide the Army with strategies and "how to" guidelines for developing and implementing a soldier-centered, training-on-demand paradigm that leverages training delivery technologies from the commercial marketplace. Research on increased levels of task complexity will help to determine viability of delivery mechanisms such as the Internet. ARI already has tested distributed training of complex cognitive skills using the virtual sandtable that resulted in a 35% improvement in performance. Research is being completed at three Training and Doctrine Command (TRADOC) schools on question-based learning strategies in Web-based asynchronous environments, and on the role of social interactions during synchronous Web-based instruction in collaborative learning environments.

In FY2003, ARI will test the effectiveness of the Internet as a delivery mode for collaborative learning (synchronous and asynchronous) in multiplayer, Internet gaming environments; and conduct experiments on the impact of structured, after-action chat rooms for a deeper understanding and for more thorough, retainable learning during practical exercises.

Selection and Assignment Research Unit

Selection, Classification, and Performance Metrics for the Objective Force Soldier *(STO IV.SP.2002.01)*

Responding to new Information Age capabilities and processes, to dramatic changes in the international arena, to changes in the capabilities and expectations of potential recruits, and to changing national priorities, the Army has entered an era of transformation that will impact doctrine, equipment, organization, and personnel. The Army requires a personnel selection and classification system geared toward future job demands where soldiers will need to be adaptable, stress tolerant, self-directed, and effective information processors and problem solvers.

This research project (FY02-05) will provide the Army with: (1) a set of critical measures of attributes needed for successful execution of future jobs and missions, (2) preliminary recommendations concerning how these measures might be incorporated into future enlisted selection and classification procedures, (3) prototype measures of future soldier performance and organizational commitment, and (4) recommendations for using these outcome measures for future soldier training and assessment.

In FY2003, we will:

- Identify projected Army-wide future job demands.
- Identify two job groupings for focused attention based on their criticality for Objective Force missions, divergence from current jobs, representativeness of future diverse critical functions, and projected size of key Military Occupational Specialties (MOS).
- Begin identifying the future job demands for the two identified job groupings.

Methods and Measures of Commander Centric Training *(STO IV.SP.2002.02)*

This STO program is a combination of four projects that are being conducted across ARI research units.

- Techniques and Tools for C4ISR Training of Future Brigade Combat Team Commanders and Staffs
- Unit Training Technologies for Future Forces
- Principles and Methods for Training Digital Skills
- Defining and Measuring Digital Skill Proficiency

The overall objectives of the STO are to develop and assess Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) training methods for Future Combat Systems (FCS) commanders, leader teams, and operators at tactical levels; to formulate principles of effective training and measurement in the Army's future environment; and to build prototype training packages to support the FCS System Development and Demonstration acquisition phase. The research will formulate principles of training and measurement in these environments and build exemplar training packages to demonstrate how to efficiently train effective commander and staff performance in these advanced systems. During FY2002, we described the changes in unit behavior associated with transitioning to digitized systems, identified key commander and operator skills in the C4ISR functions, and developed preliminary measures of performance with defined levels of proficiency. Each of the projects in this STO program, with its FY2003 objectives, is described next.

Armored Forces
Research Unit

Techniques and Tools for C4ISR Training of Future Brigade Combat Team Commanders and Staffs

Development of the Future Combat System of Systems (FCS) for a maneuver force that is highly mobile, quickly deployable, and extremely reliant on information networking capabilities creates a parallel challenge to develop, through training and experience, the thinking, confident, versatile, adaptive, and seasoned leaders required at the tactical level. The vision that the FCS will include an integrated training capability for individual platform task training as well as for commander/staff training creates critical research issues to ensure that the advanced training technologies and methods are designed, developed, demonstrated and evaluated in lockstep with the development of the FCS.

Research is being conducted (FY01-05) to identify and address key training issues for command group training of FCS-equipped forces at the brigade level and below, with emphasis on Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) functions. We are using controlled laboratory simulation of future battlefield situations to identify and measure individual and collective skills of future commanders and staffs that will impact performance in the C4ISR functional areas. ARI will take full advantage of emerging technologies to develop innovative methods and principles for effective commander and staff training by applying principles of cognitive psychology to maximize skill development, skill retention, and transfer of skills learned in simulated environments to actual operational performance. The project began by identifying potential training issues relevant to the FCS, including dynamic replanning, coordinating vertically across commands during execution, combining operator and leader tasks, commanding and controlling unmanned elements, and using knowledge management systems. We formed a partnership with the Defense Advanced Research Projects Agency (DARPA) and initiated development of concepts of FCS-cell command group functions and support requirements. In FY2002, we developed and assessed a measurement method for command group functions and workload within the framework of the DARPA partnership. ARI also designed a sequence of simulation-based experiments to address research requirements within selected functional areas, with emphasis on the FCS command group C4ISR requirements. The experiments will maximize the use of simulation-based techniques and tools to develop and then demonstrate exemplar training packages in warfighter experiments and Advanced Technology Demonstrations (ATDs). In addition, the results will provide empirically derived input to the FCS training system acquisition process.

In FY2003, we will:

- Assess methods/techniques for the measurement and training of future command and staff C4ISR tasks to include knowledge management and reachback.
- Refine selected methods/techniques for handoff to prototype Training Support Package (TSP) developers.
- Identify usability and training issues with operator control systems for FCS robotic systems.

Unit Training Technologies for Future Forces

Armored Forces Research Unit

The Army is transforming to highly mobile forces, rapidly responsive to a wide variety of contingencies. This leads to the requirement for unit training that is available anywhere, any time, and rapidly adaptable to address any situation. There is a need for transformation of unit training tools and techniques to parallel the transformation of forces.

This advanced technology development project (FY02-05) focuses on the training of commanders, team leaders, and small units in the Command, Control, Communications, Intelligence, Surveillance, and Reconnaissance (C4ISR) arena. It will develop, assess, and refine training tools and techniques initially identified, examined, and tested in laboratory research and demonstrations. This includes development of prototype training support packages and related training and performance support technologies for application in a variety of operational unit environments. Emphasis is being placed on tools and techniques for easily adapting training to meet rapidly changing dynamic unit needs using a variety of training delivery media, ranging from small handheld wireless electronic devices to networked unit equipment. Key issues that are being addressed include design of continuously accessible unit training and performance support systems, methods for semi-automated tailoring of training to fit unit needs and available delivery media, techniques for embedding performance measurement and feedback within training support packages, and management of knowledge networks underlying training and performance support systems. The products of this research will exemplify and help specify training and simulation requirements early in the process of developing future networked systems, providing support to training systems acquisition decision makers. Ultimately, the products will form the basis for operational unit training methods and strategies.

In FY2003, we will specify the implementation and management support requirements for unit training and performance measurement for future forces, focusing on C4ISR tasks within selected critical missions. In addition, we will participate in virtual simulation experiments to collect data to determine the feasibility of selected techniques and tools for implementation in training of future forces.

Advanced Training
Methods Research Unit

Principles and Methods for Training Digital Skills

The U.S. Army's commitment to leveraging technology to enhance combat power requires soldiers who understand information age technologies, possess strong digital skills, and can use them to accomplish assigned missions. There is a need to identify how best to train and sustain soldiers with such digital capabilities.

This training research (FY99-03) is identifying and documenting the principles and methods that maximize the acquisition, transfer, adaptability, and retention of digital skills for mid-and junior-level soldiers. It is addressing generalizable training principles and methods that can apply across a wide array of career fields and branches.

By completion of the research, ARI will provide these principles and methods for TRADOC to use in its digital skill training guidance and programs. In FY99, we completed an ARI Special Report, "Training Challenges for Digitization," that identified dimensions of the problem, and suggested research that needed to be conducted on the training of skills required for future battlefield operations. One important topic was how to assist soldiers in adapting to system upgrades and improving retention of digital skills. The research findings showed that soldiers could adapt quickly to system changes by exploring, and by working with their peers and with knowledgeable leaders. To best retain these digital skills, they need recurring practice on the variety of problems they may encounter under operational conditions. This year's research focuses on identifying training methods that soldiers need when collaborating with other, sometimes unfamiliar, personnel and organizational units via computer networks.

In FY2003, we will provide methods to train junior- and mid-level soldiers in skills for horizontal integration of information and general principles of training and transfer for TRADOC use in digital skill acquisition programs.

Defining and Measuring Digital Skill Proficiency

Simulator Systems
Research Unit

The Army must be capable of assessing the growth in skills and proficiency acquired by soldiers, staff, commanders, and units as they train on Army digital C4ISR systems. In addition to measuring operator skills, trainers must be concerned with measuring "user" skills and a unit's compliance with its own digital standard operating procedures (SOPs).

This project (FY01-05) will provide the Army with validated measures of performance (MOPs) for digitization-sensitive collective tasks; digital tactics, techniques and procedure (TTP) applications; task-based digital skills; unit digital SOP compliance; and digital proficiency levels. It will also provide guidance for applying MOPs, including tool requirements to support the application of MOPs.

The development of digital MOPs and guidance for their use will focus trainer workload, reducing observation requirements by nearly half. These products will also allow more time for mentoring and coaching, resulting in improved training outcomes. Ultimately, the results of this project will contribute to efficient performance of future command, control and communications training systems that will evolve as the Army fields the Future Combat Systems. We have already provided a database that links digitization-sensitive tasks to supporting digital skills and draft MOPs.

In FY2003, we will:

- Provide guidance for trainers and analysts to use in deciding what to observe, how to observe it, and when to observe it when evaluating the ability of soldiers and units to effectively employ the major applications of platform-based and TOC-based digital systems
- Provide guidance to tailor performance measurement to fit expected proficiency levels
- Develop a digital performance measurement and feedback functional architecture
- Validate digital proficiency level concepts
- Review applicability of findings to FCS C4ISR and training concepts and plans
- Plan implementation of new measures in existing digitized After Action Review (AAR) systems.

Training Objective Force Small Unit Leaders and Teams

This proposed STO program is a combination of two projects that are being conducted across ARI research units.

- Objective Force Warrior (OFW) Training
- Virtual Individual and Collective Training for Objective Force Warriors

The overall objective of this proposed STO is to develop training methods and exemplar training support packages that will allow small unit leaders and teams to take better advantage of new, emerging OFW technologies, operational concepts, and tactics, techniques, and procedures (TTPs). The primary focus is two fold -- developing training methods that facilitate rapid, accurate decision-making and developing methods for effective embedded training. Embedded training (ET) is seen as the centerpiece of the Objective Force and OFW training, yet there are few demonstrated instances of cost-effective embedded training in the Army today. We will develop necessary ET methods to accompany OFW ET hardware and software. The project will also develop training components that are critical to the success of the OFW Advance Technology Demonstration (ATD). We will continuously feed results and interim products to the OFW Lead Technical Integrator so that they can be used for the OFW ATD train up. The two projects that make up this program and their FY2003 objectives are described next.

Objective Force Warrior Training

Infantry Forces
Research Unit

OFW-equipped small unit leaders and teams will operate in highly complex decision environments with technological tools and information capabilities never before available. The technologies in development promise to provide revolutionary advances in small unit effectiveness, but their potential will only be realized if leaders and soldiers can be trained to take full advantage of the new capabilities and operational concepts. OFW decisions will be based on increasing amounts of information from a wider variety of information sources. Soldiers and leaders must develop the cognitive skills necessary to make rapid, appropriate decisions based on the increasing and varied levels of available battlefield information and commander's intent.

This project will demonstrate selected training methods that allow small unit leaders and teams to leverage new OFW technologies, operational concepts, and TTPs. It will develop guidelines for efficient, effective cognitive skills training to facilitate rapid, accurate decision-making, and develop and validate tools to assess leader decision-making and information utilization.

The research will identify successful training methods and technologies currently being used by high performing teams in the private sector and DoD and adapt those to training OFW soldier and leader skills, or develop new ones as appropriate. We will begin by identifying state-of-the-art training technologies that address generic small unit technology-related training requirements in the areas of mobility, lethality, survivability, sustainability, and situation awareness. As decisions are made regarding the selection of specific OFW technologies and subsystems, we will adapt the training methods and measures to the specifics of the selected OFW technologies.

In general, the research will leverage advances in situation awareness training and measurement, tailorable training, computer gaming, and intelligent tutoring. When necessary we will replicate OFW capabilities and information technologies as a means to assess the effectiveness of the new training methods. We will also develop and validate tools to assess decision quality and effective use of information. To the extent possible, we will work with the OFW Lead Technical Integrator and will provide initial guidelines on what to train and how to train small unit leaders and teams to effectively prepare for the ATD. We will later refine the OFW training guidelines following assessment of the ATD train up and execution.

As a new start in FY2003, we will:

- Identify potential OFW training technologies in the areas of mobility, survivability, lethality, and situation awareness/communications
- Develop flexible scenarios for training and assessing small unit leader decision skills and use of OFW technologies
- Develop after action review concepts for the Land Warrior and Objective Force Warrior systems

Simulator Systems
Research Unit

Virtual Individual and Collective Training for Objective Force Warriors

As described in the CSA Concepts for the Objective Force (2001), "Technology is not a panacea. The integration of the human and technological enablers, as well as all of the DTLOMS areas, is critical to a successful transformation to the Objective Force." Soldiers and leaders will need to be trained in both the operation of OFW equipment and in the tactics, techniques and procedures for using it in combat and non-combat operations. They will need to achieve and maintain a high level of proficiency, which indicates a need for training while deployed or deploying. Soldiers at the lowest levels may be making key decisions linking sensor information to weapons employment. Embedded training is seen as the centerpiece of Objective Force and OFW training. At present, there are few demonstrated instances of cost-effective embedded training in the Army today. Furthermore, the majority of the research and development focus is on the development of embedded training hardware and software particularly for vehicles. Little attention has been paid to what and how to train using these embedded training systems. Existing guidelines for selecting tasks for embedded training are a decade old and are largely platform oriented. Their suitability for application to future soldier-oriented systems has not been determined.

This project addresses two "Training Capabilities" identified in the Future Combat Systems Statement of Required Capabilities:

- Enable operators, maintainers, unit leaders, and staff planners to be trained in system functions by leveraging any or a combination of networked, embedded, virtual, constructive, or live training modes anywhere, any time.
- Develop, through training and experience, the thinking, confident, versatile, adaptive, and seasoned leaders at the tactical level required for the digitized, rapidly deployable objective force.

The research will develop and evaluate procedures and techniques for using embedded training, low-cost simulation, and augmented reality to enhance the fighting capabilities of digitally equipped dismounted individual soldiers and leaders. This will include training for individual soldiers in the operation and use of technologically sophisticated individual weapons and equipment, and leader training in the tactics and techniques for their employment in combat.

In FY2003, we will:

- Apply existing guidelines for selecting tasks for embedded training to OFW tasks (small unit leader and soldier). Initiate revision of guidelines if required.
- Conduct additional analyses to identify potential high-payoff applications for embedded simulations for training and mission rehearsal, and tasks for which other technologies (AR, PDAs, virtual simulations) have a high training potential. Obtain baseline performance measures.
- Establish initial OFW experimentation guidelines and performance measurement capabilities (such as experimental control software and tactical scenarios) for using STRICOM embedded technologies for behavioral experimentation.

ADDITIONAL APPLIED RESEARCH AND ADVANCED TECHNOLOGY DEVELOPMENT PROJECTS

The remaining projects in the Applied Research and Advanced Technology Development program are:

- Developing Leaders in a Changing Army
- Tools for Maximizing Active and Reserve Component Unit Performance
- Performance Measures for Objective Force Soldier Assessment
- Soldier Attitudes and Opinions
- Attrition Determinants and Management
- Improved Screening Tools for Recruiters and Station Commanders

Leader Development
Research Unit

Developing Leaders in a Changing Army

The U.S. Army faces unprecedented change over the next 30 years. It is expected that future military operations will require increasingly precise coordination of dispersed forces addressing a wide variety of missions ranging from intense combat to stability operations to stopping terrorists. Army leaders will be faced with ambiguous, high-risk situations for which no Standard Operating Procedures (SOPs) have been developed. Future Army leaders will need to more rapidly develop teams, resist stress, and adapt in complex, volatile, and unstructured environments. They will require not only versatile decision-making and critical thinking skills, but creativity and the interpersonal skills to inform, to persuade, and to inspire confidence even when physically separated from their units; and to lead effectively in joint, multi-national, and civilian/military operations. They will be challenged by widely-dispersed units where traditional notions of cohesion and chains of command may be difficult to achieve; and where junior leaders may often be required to make both tactical and strategic decisions for their dispersed teams. This will require the Army to improve its existing leader development programs and to accelerate the development process to provide the necessary training and experiences that young leaders will need to face such challenges earlier in their careers.

This research effort focuses on the creation and demonstration of tools and methods that can facilitate the development of leader skills and behaviors required to effectively perform in future scenarios; and that can accelerate the learning process by providing experiences through simulation and game technologies that would normally be experienced through extended time periods on-the-job. Our research is based on an integrated approach that addresses the Army's process of leader development through institutional education and training; unit on-the-job training and experience; and self-development. We have already developed preliminary methods that embed experience in institutional education courses and preliminary self-development tools for teaching tactical adaptability, interpersonal skills, and social knowledge. We have developed a scenario-based "Think Like a Commander (TLAC)" CD that helps instructors/mentors teach versatile thinking skills.

In FY2003, we will:

- Complete pilot testing of TLAC and develop guidelines for improving versatile thinking skills
- Demonstrate preliminary versions of full-scale interactive vignettes and automated "mentoring" to expand simulation-based leader training
- Develop methods and materials, based on realistic problem situations, to facilitate leader self-development of cognitive and conceptual skills using the worldwide web.

Tools for Maximizing Active/Reserve Component (AC/RC) Unit Performance

Reserve Component
Training Research Unit

Today's Army relies on numerous AC/RC force integration initiatives to strengthen its ability to meet military commitments at home and abroad. For these initiatives to be fully successful, unit leaders of composite AC/RC units must have knowledge of inter-component operational and cultural differences, easy access to lessons learned by their predecessors, and the latest information on ways to foster mutual trust and respect among diverse unit members. Accordingly, the RC must be prepared to accept the integration challenge to attain and maintain higher levels of readiness without the benefit of additional training time. The RC, therefore, needs to train and evaluate itself more efficiently than ever before while finding ways to ensure that enough company-grade officers are on board to guide the process. Because a good portion of RC-available time is spent on small-arms training and qualification, research is needed to (a) develop a streamlined training/evaluation process for maximizing the payoff from the resources (e.g., time, ammunition) spent, and (b) identify steps for ensuring that sufficient numbers of company-grade officers are available to effect successful implementation of this process at the unit level.

The objective of this effort is to develop tools that satisfy the information needs of AC/RC composite unit leaders, support innovative approaches for maximizing the efficiency of RC small-arms marksmanship training and evaluation, and increase the number of company-grade RC officers. In doing so, we will develop (a) a worldwide web-interactive, CD-ROM-based, information reference tool to help composite unit leaders meet the challenges of AC/RC integration, (b) easy-to-use, simulation-based tools for predicting small-arms marksmanship proficiency, (c) recommended frequencies for simulation- vs. live-fire-based qualification performance assessment, and (d) recommendations for increasing the number of company-grade officers through enhanced state Officer Candidate School (OCS) enrollment.

The U.S. Army Reserve (USAR) intends to (a) distribute the CD-ROM reference tool to Army unit leaders participating in both stateside and overseas AC/RC force integration initiatives, and (b) use the marksmanship-related products to maximize small-arms qualification rates, reduce the live-fire time and ammunition needed to do so, and serve as proof-of-principle for using simulation to satisfy yearly marksmanship training and evaluation requirements when live-fire range facilities are unavailable. The Army National Guard (ARNG) intends to use the OCS-related recommendations for reducing its current company-grade officer shortfall.

In FY2003, we will:

- Develop simulation-based tools for predicting live-fire rifle marksmanship performance on a standard, pop-up target qualification course
- Determine the extent to which simulation can substitute for live-fire evaluation of marksmanship performance over prolonged inter-qualification firing intervals

Selection and Assignment Research Unit

Performance Measures for Objective Force Soldier Assessment

Circa 1990, the Army abandoned its Skill Qualification Test (SQT) program due to the downsizing crunch and the costs for SQT maintenance and implementation. As indicated in the recent Army Training and Learder Development Noncommissioned officer (NCO) panel findings, cancellation of the SQT program has left a void in the Army's capabilities for certifying a soldiers' qualification for job performance. The Army now needs a cost-effective testing, evaluation, and developmental assessment system that accommodates both current jobs and the changing jobs and job structures expected with transformation toward the Objective Force.

The objectives of this project are to (1) validate prototype measures for certifying soldiers' qualifications for performance of assigned jobs, (2) design a system for measuring job performance with respect to expected criteria and standards, and (3) provide recommendations for an Army-wide system to certify the skill qualifications of soldiers for job performance. The project will also provide guidelines for use of the certification measures in soldier developmental self-assessment.

In FY2003, we will:

- Assess recent advances in job/skill performance certification
- Propose design for job certification

Soldier Attitudes and Opinions

Army Trends and Analysis Group

Senior leaders have a continuing need to accurately assess the command climate of the Army and to identify the issues that concern soldiers. This research on soldier attitudes and opinions provides input for Army policies and for program decisionmaking.

This project has developed a methodology for assessing soldier attitudes and opinions and conducting assessments of command climate. ARI will continue to provide data on soldier attitudes and opinions and develop improved methods for assessing them. This will allow the Deputy Chief of Staff, G-1 and other senior leaders to gain insights into soldier concerns, track trends, identify emerging issues, and provide timely and effective solutions to Army problems.

In FY2003, we will:

- Refine methods to assess the Army command climate.
- Identify recurring and new issues of concern to soldiers.

Selection and Assignment Research Unit

Attrition Determinants and Management

Lately, over one-third of soldiers leave the Army before they have completed their first term of enlistment. These high attrition rates impose burdens on recruitment, increase training costs, and reduce the personnel stability needed for unit readiness. The Army needs a more solid understanding of the causes of attrition and ways of reducing it.

This research follows the FY1999 cohort of enlisted soldiers and tracks them from the time they begin Initial Entry Training (IET), to their first operational assignment, and through their first term of enlistment. We are tracking the personnel, organizational, and extra-organizational factors that potentially influence attrition across the first enlistment term. The research has already identified pertinent career history and other variables influencing the likelihood that IET graduates will drop out or continue in the Army. Data on job and organizational experiences during the first assignment to an operational unit have also been collected. These data, in combination with data on subsequent assignment experiences, will be used to construct a multidimensional model of first-term enlisted attrition. The Deputy Chief of Staff, G-1, the Office of the Assistant Secretary of the Army (Manpower and Reserve Affairs), and the Training and Doctrine Command (TRADOC) will use the findings and products from this research to develop effective initiatives to reduce attrition and build the career force.

In FY2003, we will complete data collection and model development, and identify implications for attrition management.

Improved Screening Tools for Recruiters and Station Commanders

Selection and Assignment Research Unit

Since the inception of the All Volunteer Force, the Army has strived to fill its ranks with high quality youth. In the late 90's, recruiting became more challenging, and the Army has had difficulty enlisting sufficient numbers of high quality individuals. The best recruiters who can sustain a sufficient flow of highly qualified new soldiers to meet future demands are needed.

This effort will develop and validate personnel screens to improve recruiter productivity and station commander performance. This project began with a comprehensive, selection-oriented job analysis of the recruiter position to inform the development of new personnel screening tools that can improve recruiter selection, job performance, and production. In 2001, we developed a preliminary recruiter screening instrument. Starting in January 2002, this recruiter screening instrument has been administered to new recruiters as they reported for the Army Recruiter Course at Fort Jackson, SC. These new recruiters are being tracked during their recruiting duty, and test scores will be linked to measures of recruiter productivity and performance to establish the predictive validity of the instrument. A computerized version of the instrument is being explored as part of the Total Army Personnel Command (PERSCOM) evaluation process for recruiter selection. The Deputy Chief of Staff, G-1, the U.S. Army Recruiting Command, and PERSCOM can use the products of this research to identify individuals who will be highly productive recruiters and station commanders.

In FY2003, we will:

- Complete a job analysis of the station commander position.
- Based on predictive validity, refine sets of the new measures for screening recruiters.

RESEARCH-BASED STUDY AND ANALYSIS PROGRAM

Each year ARI solicits proposals for the Research-based Study and Analysis Program from our key Army proponents: the Assistant Secretary of the Army for Manpower and Reserve Affairs (ASA-M&RA), the Training and Doctrine Command (TRADOC), the Deputy Chief of Staff, G-1, and the Total Army Personnel Command (PERSCOM). Proposals are prioritized by the submitting proponent, reviewed by ARI for consistency with our mission, and selected based on priorities and available resources. The final program and its funding are reviewed by the proponents and approved by the Deputy Chief of Staff, G-1.

The approved FY2003 Studies are:

- Applying Adaptive Thinking Training Methodology to Distance Learning
- The Multi-Skilled Soldier Concept, Phase II
- Optimizing the Effectiveness of Helicopter Gunnery Training
- Linguist Training, Performance, and Attrition
- Reducing Advanced Individual Training Length to Less than 26 Weeks
- Trends in Influences on Attrition in Initial Entry Training
- Analysis to Support Refining the Semi-Centralized Noncommissioned Officer Promotion System for the Objective Force
- Comparative Analysis of New Aptitude Area Composites for MOS Classification
- Validating a New Operational Composite for the Assessment of Individual Motivation
- Non-intrusive Field Test Evaluation of the Enlisted Personnel Allocation System
- Selective Reenlistment Bonus: Lump Sum Payment vs. Anniversary Payment
- Updating ARI's Officer Longitudinal Research Database

Armored Forces Research Unit

Applying Adaptive Thinking Training Methodology to Distance Learning

The Army's Adaptive Thinking Training Methodology (ATTM) was formulated to address the need to develop adaptive leaders. ARI refined the methodology in the Think Like a Commander training programs that have been successfully implemented in the Brigade and Battalion courses at the School for Command Preparation, the Armor Captains Career Course, and the resident phase of the Armor Captains Career Course for the Reserve Component.

At the Armor Center, the ATTM has been shown to be an effective training methodology for classroom instruction, but it has yet to be determined whether the method would be effective without the support of a face-to-face mentor. This study evaluates the potential of the ATTM for distance learning and examines methods of replacing the face-to-face mentor.

Proponent: TRADOC Army Armor Center

Occupational Analysis Office

The Multi-Skilled Soldier Concept, Phase II

Phase I of this study provided the first formal effort to define the issues and concepts related to clustering Military Occupational Specialties (MOSs) to develop multi-skilled soldiers (MSS). There is still a need to refine these issues and concepts and to investigate, in greater depth, their applicability to the Stryker Brigade Combat Teams and Objective Force battlefield functions.

Phase II of this study will develop a more definitive operational MSS concept that could serve as the basis for development and implementation efforts. Principles for defining multi-skilled jobs derived from the functions performed by multi-functional units and multi-skill taxonomies will be developed. In addition, new and continuing issues associated with the MSS Concept will be documented.

Proponent: TRADOC, DCST

Optimizing the Effectiveness of Helicopter Gunnery Training

Rotary-Wing Aviation Research Unit

This study addresses the effectiveness of alternative training technologies and instructional strategies for acquiring and sustaining aerial gunnery skills. Training technologies include the use of simulation, dedicated training devices, embedded training, and live-fire gunnery training. In addition to training effectiveness, the cost effectiveness of these training alternatives is also being investigated. The successful completion of this study will provide the Aviation Center with valuable guidance for the design and optimization of gunnery training programs, especially with regard to the functional requirements for simulation and part-task training environments, and simulation-focused, proficiency-based instructional strategies.

Proponent: TRADOC Army Aviation Center

Linguist Training, Performance, and Attrition

Advanced Training Methods Research Unit

Army linguists require long and expensive language training. Each student who does not complete training and go on to become a linguist represents not only a burden on recruiting but also adds to the chronic shortage of linguists in the field. Previous studies have called for increasing the supply and decreasing training costs by recruiting individuals with pre-existing language skills. There is insufficient knowledge about how best to select, train, and utilize such individuals. Further, there are questions about how to manage all linguists over the extended training period required and to prepare them for successful performance in unit assignments.

This study, which began in FY02, will address how the Defense Language Institute's (DLI) processes for the intensive training of students over an extended time period prepare them for success. Comparisons will be made to those recruits with pre-existing language skills. Questionnaires, interviews, and class records will be used to track targeted samples of DLI students during MOS training and at their initial unit assignments. The result will be empirically-based recommendations for training design and management at both DLI and primary follow-on training sites. Finally, the study will suggest actions the Army could take to improve the design and management of long-term training, refresher training, training of recruits with "off-the-shelf" skills, and training that prepares soldiers for multi-functional future assignments such as those potentially faced by linguists.

Proponent: TRADOC, DCST

Occupational Analysis Office

Reducing Advanced Individual Training (AIT) Length to Less than 26 Weeks

TRADOC has been concerned that AITs of 26 weeks or longer may not only delay the first unit assignment, but also cause problems with demotivating soldiers, increased "burnout" on classroom instruction, and reduced skill retention. To make informed decisions about the appropriate length of AIT, TRADOC requires information about the existence of these problems and the extent to which these problems would be mitigated if AIT were shorter. In addition, information on potential skills that could be trained in the unit or via distance learning (DL) methods is needed to enable the schools to optimize the AIT for each MOS.

This study will assist the Deputy Chief of Staff for Training (DCST), TRADOC, in determining if soldiers' proficiency on skills trained in AIT is diminished once soldiers complete a lengthy AIT course (i.e., 26-weeks or longer) and join their first unit. The first step to answer this question is to perform a job/task analysis for three MOSs identified as highly specialized/critical by TRADOC. To accomplish this, a set of jobs and tasks for the first unit assignment in these MOS is being developed from Skill Level 1 and 2 task lists. We are using current school approved task lists modified to include input from interviews with current AIT students, instructors, training developers, and other subject matter experts. Additional modifications to this task list will be made, if needed, to accommodate changes in doctrine, organization, training and equipment as the project progresses. Once this is accomplished, the training for particular tasks can be evaluated in terms of AIT vs. DL vs. unit on-the-job training. The ARI-developed Automated Survey Generator (AUTOGEN) system will be used for the job/task survey development, data collection, report generation, and data analysis. We will use several modes of data collection, i.e., floppy disk, email, local area network, and Worldwide Web.

Proponent: TRADOC, DCST

Trends in Influences on Attrition in Initial Entry Training (IET)

Selection and Assignment Research Unit

The high levels of attrition within the Army are costly in terms of lost recruiting and training investment. ARI has been tracking the FY99 cohort of enlisted soldiers to determine what factors influence attrition. However, to preclude results being influenced by factors idiosyncratic to the FY99 cohort, this study will focus on the FY03 cohort to develop tools and procedures for TRADOC to routinely use in collecting information on the entry characteristics, attitudes, and values of cohorts entering IET. This information will provide the basis for monitoring trends and evaluating attrition-reduction programs.

Proponent: Army Accessions Command and TRADOC, DCST

Analysis to Support Refining the Semi-Centralized Noncommissioned Officer (NCO) Promotion System for the Objective Force

Selection and Assignment Research Unit

As the Army makes the Objective Force transformation, NCOs will experience changing responsibilities including training and operating in digital environments with increased mission diversity and with fewer soldiers. These demands will require successful NCOs to have a broad range of knowledge, skills, and attributes (KSAs). ARI researchers have developed new measures for assessing the KSAs that NCOs will require for successful performance in the future. Initial research findings indicate that supervisor evaluations of NCO current performance and likely performance in future environments is improved by supplementing the indicators currently used for NCO promotion decisions with these new measures.

This study will conduct a longitudinal examination of the new measures and determine the extent that they contribute to the prediction of NCO performance. To do this, soldiers eligible for promotion to junior NCO positions will complete the new measures/tests and measurement validity will be assessed by how well these test scores predict outcomes later in time, such as promotion, rank order on the promotion list, or performance after promotion. Results will be analyzed to determine whether and how to use the new measures to improve the NCO promotion system and orient it towards future NCO performance requirements.

Proponent: Deputy Chief of Staff, G-1 (MPE)

Selection and Assignment Research Unit

Comparative Analysis of New Aptitude Area Composites for MOS Classification

The Army currently employs 9 Aptitude Area (AA) composites in its classification of new recruits into initial Military Occupational Specialty (MOS) training; the composites are combinations of scores derived from the subtests in the pre-enlistment test battery of the ASVAB. The Office of the Secretary of Defense requested that the Services eliminate 2 timed tests from this battery. This necessitated redefining the Army's composites. Redefined, these will make up an interim set of 9 composites. To improve classification efficiency, the Army is considering adopting a more refined set of 17 AA composites that were developed by ARI based on a job performance criterion.

In this study, we will examine implementation issues for the interim 9 AA composites and the more refined 17 AA composites. We will review the placement of MOS in job families, derive MOS qualifying scores on each composite, and analyze applicant pools to assess the comparative advantages of the 9 and 17 AA composites for training eligibility and performance.

Proponent: Deputy Chief of Staff, G-1 (MPA)

Selection and Assignment Research Unit

Validating a New Operational Composite for the Assessment of Individual Motivation

ARI recently developed a test of motivational attributes designed to predict enlisted attrition and job performance. This new measure is called the Assessment of Individual Motivation (AIM). Positive findings from ARI's AIM pre-implementation research program led to its operational use in an innovative Army recruiting market-expansion program, "GED Plus," whereby AIM scores may compensate for a lack of a high school diploma. This pilot program, began in February 2000 and is scheduled to continue through September 2003.

To improve AIM, this study will investigate incorporating some ASVAB subtests and some demographic information, and will validate the new, expanded version as a predictor of training attrition. This effort will help the Army to evaluate AIM's utility as a market-expansion screening tool.

Proponent: Deputy Chief of Staff, G-1 (MPA)

Non-intrusive Field Test Evaluation of the Enlisted Personnel Allocation System

Selection and Assignment Research Unit

Benefits of improved soldier performance and human resource utilization would be realized from optimization in the classification process; i.e., the better matching of recruits to initial training and job assignments. The Enlisted Personnel Allocation System (EPAS) is designed to enhance the Army's current training reservation system known as REQUEST. EPAS will allow REQUEST to offer more optimal training opportunities and assignments to incoming recruits. This field test will not impact the current assignment procedure, thus being a non-intrusive data collection. The test will yield results on whether the EPAS enhancement assigns soldiers to (1) meet the Army's qualification goals for each MOS and (2) increase soldier quality across all MOSs.

This field test evaluation contains three phases. The first is collection of applicant transactions data that permits the creation of enhanced lists of job training opportunities outside of REQUEST, keeping that function within the EPAS subsystem. The Army's REQUEST system has made modifications to provide the requisite transactions data. The second phase is production development (design, code, and test) of a sequential assignment algorithm (in addition to the EPAS batch procedure), and the coding of the simulation routines for the evaluation. The third phase is the field test evaluation per se, with a focus on the effects of the EPAS enhancements upon the REQUEST list of job training opportunities and the classification gains provided by the enhancements, addressing procedural and efficiency issues.

Proponent: Deputy Chief of Staff, G-1 (MPA)

Selective Reenlistment Bonus: Lump Sum Payment vs Anniversary Payment

Selection and Assignment Research Unit

The Armed Forces Enlisted Personnel Bonus Revision Act of 1974 established the Selective Reenlistment Bonus (SRB) effective 1 June 1974. The SRB program is a management tool utilized to increase retention rates in critical skills. The legislation authorizes payment of the bonus either in equal annual installments over the term of enlistment or in one lump sum payable at time of reenlistment.

This study will determine the relative motivational value of lump sum payment at the time of reenlistment compared to annual installment payments over the term of enlistment. These cost-benefit analyses will result in recommendations for either lump sum payment or increased bonuses over the term of the enlistment.

Proponent: PERSCOM

Selection and Assignment Research Unit

Updating ARI's Officer Longitudinal Research Data Base (OLRDB)

Databases used at ARI to inform personnel policy decisions at the Office of the Deputy Chief of Staff, G-1 and PERSCOM need to be updated on a regular basis to ensure timely and accurate information for analyses. The OLRDB is a longitudinal file of Army Officers that allows the tracking of many aspects of Army officer career progression. At the present time, this database includes all officers commissioned from 1979 through 2000. The database includes all officers who are currently in the Army and all the officers commissioned in these year groups who have left the Army. To maintain the longitudinal nature of the database and its usefulness for analyses, this study will update these files with 2001 and 2002 data.

Proponent: PERSCOM

OPERATIONAL PROGRAM "CENTERS OF EXCELLENCE"

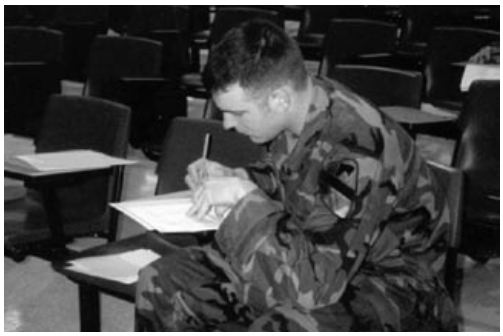
In addition to ARI's S&T program, we have two Operational Programs:

- The Center of Excellence for Army Personnel Surveys
- The Center of Excellence for Occupational Analysis

These two centers provide the operational capabilities for developing and fielding personnel surveys that provide a continuous link with soldiers and leaders in the field and for developing technologies that facilitate rapid job analysis to make sure that soldier and leader jobs remain current and responsive to the changing requirements, force structure, and operations envisioned for the Objective Force.

Army Personnel Survey Office

The Center of Excellence for Army Personnel Surveys



The Army Personnel Survey Office (APSO) is the Army's Center of Excellence for attitude and opinion surveys of Active Component soldiers and their dependent family members. Top Army leaders use the survey data to "keep a finger on the pulse" of the Army. The survey findings keep Army leaders informed about the well being and needs of Army personnel, the need for special policies and programs, and the impact and outcomes of the policies and programs already implemented. Attitude and opinion surveys provide a unique source of information because the answers to scientifically-developed survey questions are anonymous, quantifiable, and valid. Survey data from a random sample of soldiers provide reliable, objective information that is generalizable to the entire Army population and allows us to track any changes in attitudes, opinions, and experiences. In short, surveys provide the Army with a highly cost-efficient method of staying in touch with soldiers and their dependent family members to stay current on the issues of importance in the field.

APSO conducts two Army-wide surveys on a recurring basis: the omnibus, semi-annual Sample Survey of Military Personnel (SSMP) and the biennial Survey on Officer Careers (SOC). As part of the development of these two surveys, APSO routinely solicits issues from other Army agencies and activities, helps these agencies develop survey questions addressing the issues, and provides a data analysis for them on their specific questions. This process reduces the burden on troop time that would be required from multiple smaller surveys while ensuring soldier feedback on important issues. In addition, a number of questions on key personnel issues are asked on a regular basis to track the trends or changes over time. Top Army leaders routinely receive survey trend reports on such issues as job satisfaction, satisfaction with pay, benefits and housing, leader support for Army families and single soldiers, equal opportunity/discrimination, unit climate, and morale. Survey results are also reported to the U.S. Congress in the annual Army Posture Statement.

The APSO FY2003 program includes:

- The Spring and Fall SSMPs
- The 2003 SOC
- Automated surveys using the Army Knowledge On-line (AKO) website
- Implementation of a self-contained web-based survey capability

As the Army's Center of Excellence for attitude and opinion surveys, APSO continually provides technical advice and assistance related to survey development and methodology, prepares special analyses and reports to respond to requests from top Army leaders, and maintains linkages with DoD, the other Services, and the survey industry.

The Center of Excellence for Occupational Analysis

Occupational Analysis Office

The Occupational Analysis Office (OAO) is the Army's Center of Excellence for analyzing, synthesizing, and reporting data on the job requirements of officer and enlisted occupations in both the Active and Reserve Components. Occupational Analyses are generally performed when weapon systems, organizational structures, or tasks change. These analyses focus on the need for Military Occupational Specialty (MOS) design/redesign, including creation of new MOS and the consolidation of existing MOS. In addition, the task performance, skill, and knowledge requirements of MOS are examined to determine training requirements that best support the occupational structure. Two studies, one addressing the multi-skilled soldier concept and the other assessing the potential for reducing the length of Advanced Individual Training courses that are currently longer than 26 weeks, are underway.

In the Second Quarter of FY02, the OAO made a significant change in its way of doing business with the implementation of the Automated Survey Generator (AUTOGEN) system. AUTOGEN was developed in conjunction with Headquarters, U.S. Army Training and Doctrine Command (TRADOC) to allow TRADOC schools to conduct external course evaluation and job analysis surveys using floppy disks, the Internet, Email and local area networks for data collection. The system does not require the user to have extensive survey or statistical skills and includes an analysis capability that is browser-based. OAO has begun providing technical support to the TRADOC schools in the use of AUTOGEN and will, with HQ TRADOC, ensure that the system is kept current with changes in technology and training policies and procedures.

In FY2003, we will continue the development of AUTOGEN with the addition of Common Task job analysis and Functional Course external evaluation capabilities. During the First Quarter of the fiscal year, analysis of the HQ TRADOC sponsored Staff and Faculty job analysis and recommended task training priorities will be completed.

CONCLUSION

"Such a vision depends upon the skills, experience, and training of the people comprising the Total Force and their leaders. The major innovations necessary to operate in the environment … can only be achieved through the recruitment, development, and retention of men and women with the courage, determination, and strength to ensure we are persuasive in peace, decisive in war, and preeminent in any form of conflict."

Joint Vision 2020

The human component of warfighting is people. The Army transformation can only be successful to the extent that the selection, training, and development of soldiers, leaders, and units are synchronized with the transformation and development of advanced systems. If the Army is to move toward a more strategically responsive, deployable, agile, versatile, lethal, survivable and sustainable Objective Force, the soldiers will have to make it happen. They operate the sophisticated vehicles and equipment, shoot the high-tech weapons, react to stress and change, and improvise when sophisticated, high-tech, networked systems fail. ARI has conducted, and will continue to conduct, the science that is necessary to ensure this human transformation. Our behavioral science research is the foundation of selecting and assigning quality people, conducting effective training and leader development, maximizing the efficiency and effectiveness of training technologies and simulations, improving the integration of the Reserve and Active components of the Army into effective teams, and improving the retention of high quality, experienced people. The FY2003 program described in this document is a significant step toward ensuring a trained and ready Army now, and an Army that can easily adapt and embrace change as we move toward the future.

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